

NOTES ON THE ALOES OF S. TROPICAL AFRICA WITH FOUR NEW SPECIES AND A NEW VARIETY

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ABSTRACT

Four new species of *Aloe* from Angola are described, together with a new variety of *A. andongensis* Bak.; their apparent relationships discussed and their positions in the Key to Reynolds, The Aloes of Tropical Africa and Madagascar (1966) are indicated. *A. esculenta* Leach is further discussed in the light of the discovery of an isotype specimen of *A. baumii* Engler & Gilg.

UITTREKSEL

AANTEKENINGE OOR DIE AALWYNE VAN S. TROPIESE-AFRIKA MET VIER NUWE SOORTE EN 'N NUWE VARIËTEIT

Vier nuwe *Aloe* soorte vanaf Angola word beskryf met 'n nuwe variëteit van *A. andongensis* Bak.; hulle klaarblyklike verwantskap bespreek en hulle posisies in die sleutel van Reynolds in "The Aloes of Tropical Africa and Madagascar" (1966) word aangedui. *A. esculenta* Leach word verder bespreek in die lig van die ontdekking van 'n Isotipe eksemplaar van *A. baumii* Engler & Gilg.

The three shrubby new species now described would fit into the key in Reynolds, Aloes of Tropical Africa & Madagascar (1966), under Group 19 (page 330) "Plants of shrubby growth" as follows:

- A. (c) 2. *Inflorescence simple* or *1-2-branched*, 30-50 cm high; *leaves* strongly recurved, deeply concave; upper surface deep yellowish green, white-spotted in transverse bands, 20-30 cm long $\times$ 7,5-9 cm broad; *racemes* cylindric acuminate $\pm$ 20 cm long; *pedicels* 15-22 mm 129a *A. lepida*

The addition of another sub-division to "B" is required to accommodate *A. scorpioides* and *A. vallis*.

- B. (e) *Plants densely shrubby; inflorescence simple* or *one-branched* (very rarely 2-branched); *leaves* 20-30 cm long.
1. *Leaves* $\pm$ 3 cm broad, yellowish green, unspotted; *racemes* erect, narrowly conic-acuminate, averaging 20 cm long; *pedicels* $\pm$ 8 mm long 135c *A. scorpioides*
 2. *Leaves* $\pm$ 4 cm broad, grey-blue to blue-green, maculate with small, circular or oval scattered whitish spots; *racemes* suberect or oblique, with the laterals widely diverging, elongate cylindric-acuminate, averaging 34 cm long; *pedicels* $\pm$ 4 mm long 135d *A. vallis*

A. procera falls into Group 14; *A. Perianth* cylindric-trigonus (page 219), but will require an alteration to the "Inflorescence lead", as follows:

Inflorescence many branched, 1-2,75 m high and the addition under

(b) *Leaves* with dentate margins of:

5. *Inflorescence* 1,5-2,75 m high. *Racemes* lax, 25-40 cm long, *pedicels* averaging 3 mm long. *Perianth* reddish purple, 28-33 mm long 89a *A. procera*

Aloe lepidia Leach, sp. nov.; *A. andongensi* Bak. arctissime affinis sed sigillatim dissimilis foliis proportione latioribus, rigide valde recurvis, profunde late concavis vel canaliculatis, vivide flavo-atrovirentibus, supra maculis albidis conspicue fasciatis, dentibus marginalibus grandioribus; racemis plus minusve 2-plo longioribus laxissime florentibus; perianthio parum graciliore, ore latissime aperto, segmentis exterioribus brevius libris antherisque inclusis.

Frutex succulentus humilis e basi ramosus, plerumque c. 25–30 cm altus; caulibus erectis relative crassis, infra plus minusve nudis ad apicem foliorum rosula compacta coronatis. *Folia* valde patentia, rigide valde recurva, late ovata, attenuata, 20–28 cm longa, prope basin 7,5–9 cm lata; marginibus manifeste sinuato-dentatis, dentibus pungentibus deltatis, saepe aliquanto unciformibus, ad apicem brunneolis, 3–7 mm longis, 6–12 mm distantibus; *supra* basin versus plerumque leviter concava, superne profunde concava vel canaliculata, vivide flavo-atrovirentia maculis albidis conspicue irregulariter fasciata; *subtus* convexa flavo-atrovirentia maculis parvioribus basin versus confertioribus. *Inflorescentia* racemosa, 1 vel 2-ramosa, 30–50 cm alta. *Pedunculus* 6–12 cm longus, virellus epruinosis, basi aliquanto inaequaliter compressus, c. 10 mm latus. *Racemi* erecti, cylindrico-accuminati, plerumque c. 20 cm longi, 7–8 cm diam. aliquantum laxe florentes, gemmis mox nutantibus. *Bractae* ovato-acuminatae, 6–7 mm longae, 3–3,5 mm latae, exalbidae scariosae, 3-nervatae, nervis brunneolis. *Pedicelli* rubelli quam perianthium plerumque pallidiores, valde patentes, ad apicem cernui, 15–22 mm longi; *gemmis floribusque* inapertis aurantiaco-coccineis ad apicem viridi-brunneis. *Peranthium* dilute aurantiaco-coccineum, aliquanto lutescenti-vittatum, subtus pallescens, basi obtusum vel truncatum perbreviter stipitatum, cylindricum leviter curvatum, plerumque c. 25 (29) mm longum, prope basin perleviter ampliatum c. 5,5 mm diam., inde ad c. 4 mm leviter constrictum, illinc denuo ad 6 mm gradatim ampliatum, in ore luteolo 8–9 (11–12) mm diam.; *segmenta exteriora* per 5–6 mm libera, ad apicem recurva, nervis obscuris coccineis 3; *interiora* latiora obtusiora, marginibus aliquanto angustis, translucenti-albidis, obscurissime coccinei-nervatis. *Antherae* atro-testaceae inclusae. *Stigma* aliquando perbreviter exsertum. *Ovarium* pallide viride, anguste ovoideum plus minusve truncatum, c. 4 mm longum, 2–2,5 mm diam. *Capsula seminaque* non visa.

Typus: ANGOLA, Huambo Distr., *Baptista de Sousa s.n. sub Leach 14538A* (LISC, holo.; SRGH).

ANGOLA. Huambo Distr., Morro de Sume, $\pm$ 27 km SSE ex Nova Lisboa, *Baptista de Sousa s.n.*, Hort. Hougard., prope Sinoia, Rhodesia, fl. 15. ii.1973, sub *Leach 14538A* (LISC; SRGH); *ibid.* Hort. Leach., Greendale, Rhodesia, fl. 14.v.1973, *Leach, Cannell & de Sousa 14538* (BM; PRE).



FIG. 1.

Aloe lepidota Leach, from the Morro de Sume, Leach, Cannell & B. de Sousa 14538.

This most ornamental new species from near Nova Lisboa appears to be very closely related to *A. andongensis*; however, it differs significantly from that species in its proportionately wider, rigidly strongly recurved, deeply concave, dark yellowish green leaves which are conspicuously marked with irregular transverse wavy bands of whitish spots and armed with much larger marginal teeth. The laxly flowered, cylindric-acuminate racemes of *A. lepidota*, while clearly showing a relationship with those of *A. andongensis*, are on average about twice as long and with buds more quickly nutant, are quite different in character from those of its relative; the open flowers of the new species are also rather more slender, with the outer segments free for only 5–6 mm, the mouth more widely open (up to 12 mm in diam.), the anthers included and the stigma only occasionally very shortly exserted. In vegetative characters there appears quite possibly to be a strong link also with *A. squarrosa* Bak. from Socotra; it is this kind of apparently reticulate relationship which has persuaded the author that the introduction into the classification of the genus, of the subspecies concept (with its evolutionary implications) would be both premature and unwise in view of our, as yet, so very incomplete knowledge at species level.

It seems to be worthy of note that specimens of both *A. andongensis* and *A. lepidota* have retained their distinctive characteristics in cultivation, and in fact, have displayed remarkably little modification, even in respect of size.

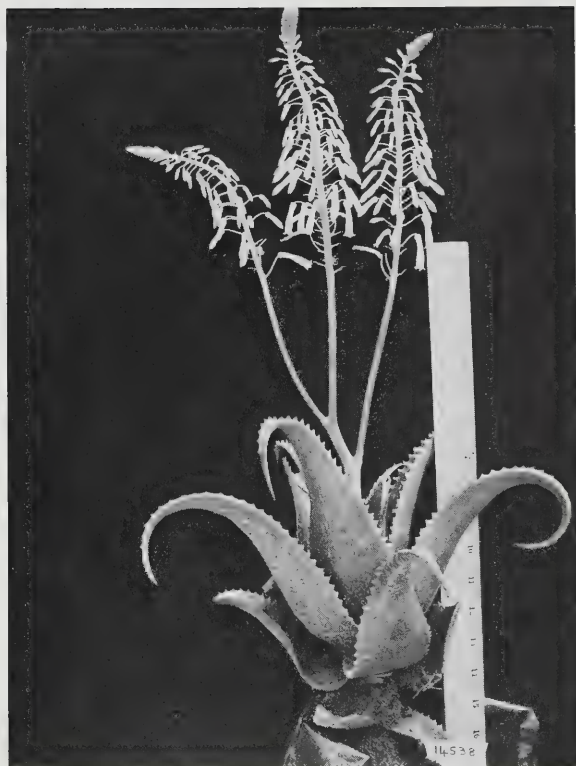


FIG. 2.

Aloe lepida Leach, the type plant flowering
in Mr. P. Hougard's garden near Sinoia, Rhodesia.

Distribution appears to be restricted to the Morro de Sume, some 27 km SSE of Nova Lisboa, where a remarkably morphologically homogeneous population occurs as rather scattered individuals on broken rock slopes in shade of heavily lichen clothed, dwarfed trees, in association with *A. metallica* Engler & Gilg (a previously unrecorded locality for this sp.). The site appears to be subject to frequent grass fires to which the new species seems to be rather less resistant than its associated congener.

This distribution is associated with the Cubango River system, as is that of *A. metallica*, rather than with the Cuanza and other westerly flowing rivers, as are all the known localities for the related *A. andongensis*.



FIG. 3.

A comparison of racemes of: Left: Typical *A. andongensis* Bak.
Right: *A. lepida* Leach, from the type plant.

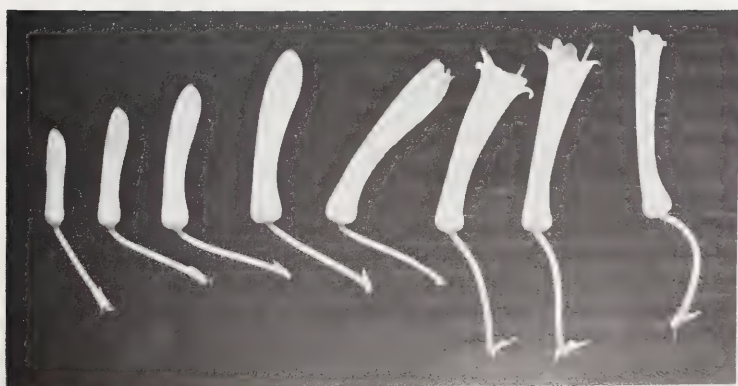


FIG. 4.

A. lepida Leach; Flowers 1:1.

Plant: a low succulent shrub, branching from the base, usually about 25–30 cm high; stems erect, relatively stout, more or less nude below and with a compact rosette of leaves at the apex. *Leaves* widely spreading, rigidly strongly recurved, broadly ovate attenuate, 20–28 cm long, 7.5–9 cm wide near the base; *margins* prominently sinuate dentate, with sharp, brown-tipped, deltate, often somewhat hooked teeth arising from a whitish base, 3–7 mm long, spaced 6–12 mm apart along the margins; *upper surface* usually slightly concave towards the base becoming more deeply so above and caniculate towards the apex, bright to dark yellowish deep green, conspicuously but irregularly marked with transverse wavy bands of whitish spots; *lower surface* convex, similar in colour but with more numerous, smaller, whitish spots more crowded towards the base. *Inflorescence* racemose, 1–2-branched, 30–50 cm high. *Peduncle* 6–12 cm long, greenish, sometimes tinged with brown, devoid of bloom, somewhat unequally compressed at the base, with the inner face only slightly convex, about 10 mm wide. *Racemes* erect, cylindric acuminate, usually about 20 cm long, 7–8 cm diam., rather laxly flowered, with the initially spreading buds very soon becoming nutant. *Bracts* ovate acuminate, 6–7 mm long, 3–3.5 mm wide, scarious, whitish, with 3 brownish nerves. *Pedicels* orange scarlet, usually paler than the perianth, widely spreading, cernuous at the apex, 15–20 mm long, becoming erect in fruit, with the buds and unopened flowers orange scarlet, green at the apex, becoming brownish. *Perianth* pale orange scarlet, somewhat yellowish striped, paler, often yellow on the underside; obtuse or somewhat truncate at the very shortly stipitate base, cylindric, slightly curved, averaging about 25 mm (up to 29 mm) long, slightly enlarged at the base, $\pm$ 5.5 mm diam., then slightly constricted to about 4 mm, then again gradually enlarged to about 6 mm diam. below the 8–9 (10–12) mm diam., wide open, pale yellowish mouth; *outer segments* free for 5–6 mm, recurved at the apex, with 3 obscure scarlet nerves; *inner segments* more obtuse and broader than the outer, yellow, very obscurely orange scarlet nerved, with a rather narrow translucent whitish margin. *Anthers* included, dark terra-cotta with dark peach coloured pollen. *Style* very pale lemon with a whitish stigma, only occasionally very shortly exerted. *Ovary* pale green, more or less narrowly ovoid, somewhat truncate at the apex, $\pm$ 4 mm long, 2–2.5 diam. towards the base, lightly 6-grooved, with 3 pale yellow stripes in the sinuses. *Capsule* and *seed* not seen.

Aloe scorpioides Leach, sp. nov.; *A. palmiformi* Bak. affinis sed habitu humiliore fruticosiore; foliis flavovirentibus persaepe immaculatis, marginum dentibus parvioribus; inflorescentiae pedunculo gracillimo patulo arcuato-ascendenti plerumque initio descendenti; racemis densius florentibus augustius acuminatis; bracteis grandioribus prominenter multi-nervatis; pedicellis brevioribus, gemmis floribusque inapertis suberectis; perianthio aliquanto breviori curviori valde differens.



FIG. 5.
Flowers 1:1, *Leach & Cannell 14654*.



FIG. 6.
Aloe scorpioides Leach, showing narrowly acuminate racemes, Ht. 0,85 m.
Leach & Cannell 14704.

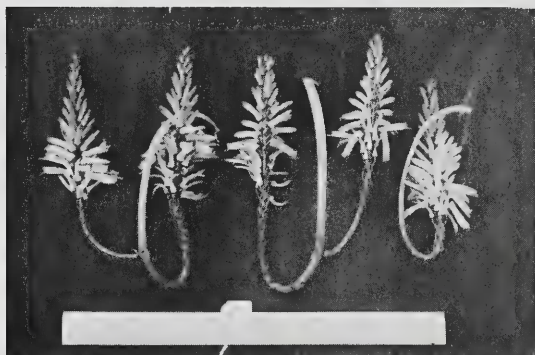


FIG. 7.

Aloe scorpioides, showing looped inflorescences. Reynolds 9275.

Frutex succulentus humilis foliosus, basi et superne ramosus, plerumque c. 0,5 m altus (rarissime usque ad 1 m); caulibus ramisque saepissime quaquaversus patentibus raro erectis, infra sublaxe foliatis ad apicem foliis 5–7 rosulatis. *Folia* patentia vel recurvula, angustissime ovato-attenuata usque ad 30 cm longa, basi 2,5–3,5 cm lata; marginum dentibus deltatis vel aliquanto unciformibus, flavidis vel brunneolis, 2–3 mm longis, 10–15 mm distantibus; folia inferiora amplexicaulia, internodiis striatis, 1–2 cm longis; *supra* perleviter concava, flavovirentia, immaculata; *subtus* convexa, virentia, obscure striata, plerumque immaculata, raro basin versus parciissime pallide parvi-maculata. *Inflorescentia* simplex vel 1– (rarissime 2–) ramosa. *Pedunculus* gracilis, viridis, glaber, haud pruinosis, superne plerumque brunneolus, initio patens, plerumque aliquanto vel interdum valde descendens deinde arcuato-ascendens, plerumque c. 15 cm longus; basi plano-convexus vel inaequaliter biconvexus, c. 10 mm latus, marginibus lateralibus acutis, superne in sectione transversali ovalis, c. 5 mm crassus, plerumque aliquot bracteis sterilibus infra racemos ornatus. *Racemi* erecti, plerumque c. 20 (11–25) cm longi (laterales breviores), c. 6 cm diam. prope basin, anguste conico-acuminati; gemmis floribusque inapertis suberectis, floribus apertis nutantibus. *Bracteae* pedicellos amplectentes, c. 6,5 mm longae, usque ad 3,5 mm latae, plus minusve ovato-subacutae vel acuminatae, prominenter multi-nervatae brunneolae. *Pedicelli* viridi-brunneoli, parce minute albo-maculati, c. 8 (6–10) mm longi. *Perianthium* coccineum, lutescenti-vittatum ubi apertum, inflme macula viridi ornatum, basi plus minusve obtusum perbreviter stipitatum vel truncatum, cylindrico-trigonum, plerumque c. 24 (21–28) mm longum, prope basin leviter ampliatum c. 7 mm diam., inde ad c. 5,5 mm leviter constrictum, illinc faucem versus denuo dilatatum usque ad 8 mm in ore aperto; *segmenta exteriora* per 6 (8,5–10) mm libera,

nervis obscuris coccineis 3, ad apicem brunnoelum confluentibus, marginibus lutescentibus; *interiora* latiora, late luteo-marginata, versus apicem brunnescentia, leviter carinata. *Antherae* non vel usque ad 2 mm exsertae. *Stigma* demum usque ad 2,5 mm exsertum. *Ovarium viride*, plus minusve obtuse trigono-ellipsoideum, c. 6 mm $\times$ 2,75 mm. *Capsulae* raro effectae, tum plerumque aliquanto deformes; semina non visa.

Typus: ANGOLA, Moçâmedes Distr., *Leach & Cannell 14654* (LISC, holo.; isotypi numerosi alibi conservati).

ANGOLA. Moçâmedes Distr., near Humbia, towards the base of the western escarpment of the Serra da Chela, Hort. Leach., fl. iv. 1973, *Leach & Cannell 14654* (BM; BR; K; LISC; LUA; LUAI; M; MO; PRE; SRGH); idem, Hort. Cannell., fl. iii.1972 (ZSS); near Vila Arriaga, Hort. Leach., fl. 24.iii.1972, *Leach & Cannell 14704* (BOL), idem, fl. 8.iv.1973 (BR; NBG; SRGH); ibid. Hort. Cannell., fl. iii.1972 (B; COI); "Western slopes of the Serra da Chela, $\pm$ 14 miles W of Sá de Bandeira", Hort. Leach., fl. 21.iv.1972, *Reynolds 9275* (BM; LISC), idem, fl. iv.1973 (K; PRE; SRGH); "between Sá de Bandeira and Moçâmedes", Hort. Thompson., Magoeba's Kloof, fl. 22.v.1968 (PRE).

Note: There is some uncertainty regarding the precise localities of the last two specimens as "Western slopes . . ." would place the first in Moçâmedes Distr., while " $\pm$ 14 miles W . . ." is high on the plateau in Huila Distr., and "between Sá de Bandeira and Moçâmedes" includes altitudes from 6 000' to sea-level with a corresponding range of ecological niches. However, on the available evidence it seems most probable that both were collected somewhere along the escarpment road leading down to Vila Arriaga.

In habit and slender arcuate-ascending peduncle with acuminate racemes with suberect buds, this new Angolan species most closely resembles *A. acutissima* H. Perr. from Madagascar, but it seems probable that the geographically adjacent *A. palmiformis* is, in fact, its closest relative. From this latter *A. scorpioides* differs significantly in a number of characters, most noticeably perhaps, in the development of its inflorescence. The much more slender peduncle of the new species is usually at first descending (sometimes almost vertically so), then arcuately ascending with the more densely flowered, more narrowly acuminate racemes held erect. This habit is sometimes developed to the extreme extent where the inflorescence completes a whole turn, with the racemes passing the descending peduncle on which they are borne. Other divergent characters are found in the suberect buds and unopened flowers, shorter pedicels, and generally shorter, curved flowers, while the larger prominently nerved, orange-brown bracts are quite distinctive: finally the plants are smaller, more scrambling and shrubby in habit, with yellow-green, almost invariably immaculate leaves with smaller marginal teeth.

Distribution appears to be restricted to the lower slopes of the Serra da Chela above Vila Arriaga, and near that village at the foot of the escarpment to the north-west of Sá de Bandeira, while its related congener occupies the rocky spurs and outcrops at higher altitudes on the plateau. The largest population found was growing on rock slopes not far from Vila Arriaga, where dense concentrations of plants cover relatively large areas in partial shade of mixed woodland. Elsewhere the colonies seen were smaller with plants usually scrambling on and among rocks in the open.

Variability appears to be limited mainly to the length and precise shape of the perianth, plants otherwise present a very uniform aspect. Leaf sap is particularly bitter in taste and when dry has a consistency not unlike that of the newly described *A. vallis* from further to the south on the same escarpment. Somewhat similar "crusty" sap appears to be common to several other Angolan species, including *A. andongensis*, *A. palmiformis* and the new *A. lepida* from Nova Lisboa.

Capsules are very sparingly developed in *A. scorpioides* and are then often somewhat malformed, while the anthers appear usually to be abortive, or if developing, to contain very little pollen. These characters, combined with the perianth variability, give rise to conjecture that the species may be hybrid in origin. It is difficult however, even to hazard a guess as to the possible parentage (apart possibly from *A. palmiformis*) from among the few species known to exist in the general area today, unless perhaps, the characters of *A. vallis* are very recessive; certainly a simple or one-branched inflorescence is common to both, as is also the relatively slender peduncle. However, despite these similarities as well as their low shrubby habit the two species do not otherwise have the appearance of being closely related, while *A. scorpioides* appears to be more plentiful than either of the abovementioned species.

Plant: a low, leafy, succulent shrub, branched from the base and above, usually about 50 cm high (rarely up to 1 m); stems and branches usually widely spreading in all directions, only rarely erect, subclaxly foliate below with a rosette of leaves at the apex. *Leaves* spreading or somewhat recurved, very narrowly ovate-acuminate, up to 30 cm long, 2.5–3.5 cm (averaging ± 3 cm) wide near the base; margins armed with deltate or somewhat forwardly hooked, yellowish or brownish tipped, pungent teeth, 2–3 mm long and 10–15 mm apart, the lower leaves basally sheathing with the striate internodes 1–2 cm long; *upper surface* very slightly concave below, flat or sometimes slightly convex above, yellowish green unspotted; *lower surface* strongly convex, rather darker than the upper surface, obscurely striate, usually immaculate, only rarely very sparingly spotted towards the base. *Inflorescence* simple or 1 (2)-branched. *Peduncle* slender, glabrous, green, not at all pruinose, becoming brownish above, at first spreading, then often, if not usually, somewhat descending,

sometimes strongly so, then arcuately ascending with the racemes held erect, generally about 15 cm long, plano-convex or unequally biconvex at the 10 mm wide base, with acute, sometimes wing-like lateral margins, soon becoming oval in cross-section to terete above, ± 5 mm thick, usually with a few sterile bracts below the racemes and the branches clasped at their base by a large attenuate many-nerved bract below and another similar but $\pm$ truncate above. *Racemes* erect, averaging 20 (11–25) cm long (the laterals usually shorter), ± 6 cm diam. towards the base, narrowly conical or cylindric-acuminate, with the buds and unopened flowers suberect and the open flowers becoming nutant. *Bracts* clasping the pedicels, more or less ovate, subacute or acuminate, $\pm 6,5$ mm long, up to 3,5 mm wide, orange-brown, prominently dark brown multi-nerved (mostly ± 5), the nerves raised and sometimes appearing to be somewhat crisped. *Pedicels* greenish brown, sparingly minutely white flecked, ± 8 (6–10) mm long. *Perianth* scarlet, yellow striped in open flowers, with a rather conspicuous green blotch at its base, averaging ± 24 (21–28) mm long, cylindric trigonous, more or less obtuse at the base, very shortly stipitate or sometimes truncate, slightly inflated around the ovary, ± 7 mm diam. then slightly constricted to about 5,5 mm enlarging again towards the throat, more sharply but only slightly constricted just below the wide open mouth ± 8 mm across; *outer segments* free 6 (8,5–10) mm, obscurely 3-nerved (sometimes partly 5-nerved) with yellowish margins and the 3 nerves confluent at the brownish, spreading-recurved apex; *inner segments* slightly keeled towards the orange-brown apex, with broad, yellow to orange-yellow margins. *Filaments* palely translucent towards the base becoming yellowish above, with orange-brown, apparently usually abortive *anthers*; *pollen*, when present, peach coloured; *style* pale green, stigma whitish, at length exerted up to 2,5 mm. *Ovary* pale green, more or less obtusely trigonous, slightly tapering towards the apex, more or less ellipsoid, ± 6 mm $\times$ 2,75 mm, 6-grooved, yellowish in the grooves. *Capsules* seldom developed, then usually somewhat misshapen; *seeds* not seen.

Aloe vallis Leach, sp. nov.; *A. gossweileri* Reyn. et *A. catengiana* Reyn. affinis sed habitu humiliore, rosulis foliorum caesio-viridium oblique portatis; inflorescentia simplici vel uniramosa; racemis c. 2-plo longioribus augustius acuminatis; floribus brevioribus, brevissime pedicellatis et perianthii segmentis exterioribus brevius libris ambobus valde differens.

Planta fruticosa, c. 30 (50) cm alta, e basi ramosa, foliorum rosulis terminalibus oblique portatis. *Folia* molliter carnosa, valde patentia, anguste ovato-attenuata, caesio-viridia vel caeruleo-grisea; illis rosulae 22–34 cm longis, 4–5 cm latis et usque ad 1,5 cm crassis basin versus; inferiora parviora distantia, internodiis dense albidomaculatis; *supra* leviter convexa vel plus minusve plana,

sparsim albedo-maculata basin versus, maculis parvis ovalibus vel circularibus; *subtus* valde convexa, copiosius maculata; *marginēs* angustiores flavescētes, dentibus pungentibus flavidis deltatis, 2,0–2,5 mm longis, c. 10–12 mm distantibus armati, interstitiis plus minusve rectis. *Succus* foliorum flavido-opacus crustaceus. *Inflorescentia* simplex vel divaricate uniramosa, suberecta vel obliqua, ex rosula foliorum procurrens, 50–60 cm longa. *Pedunculus* gracilis, basi plano-convexus, viridis, saepe brunneo-vittatus, superne teres, brunneo-purpurascens. *Racemi* anguste elongate cylindrico-acuminati, laxe floriferi, gemmis floribusque inapertis valde patulis, floribus interdum subsecundis, demum pendulis; *racemus terminalis* plerumque c. 32 (25–45) cm longus, *lateralis* 17–30 cm longus. *Bracteae* ovatae, acutae, scariosae, pallide brunneae albo-marginatae, nervis atro-brunneis 1–5, plerumque 3, usque ad 4,5 mm longae $\times$ 2,5 mm latae. *Pedicelli* brunnei, 4,0–4,5 mm longi. *Perianthium* vivide rubrum, ad orem apertum lutescentia, 20–25 mm longum, leviter curvatum, fere cylindricum (vix trigonum), ad basim c. 5 mm diam., obtusum, supra ovarium paululum decrescens, inde ad 5,5 mm diam. gradatim dilatatum; *segmenta exteriora* per 4,5–6,0 mm libera, triplinervia; *interiora* latiora, obtusiora, triplinervia, ad apicem aurantiaco-lutescentia, marginibus latis pallidis translucētib. *Antherae* inclusae vel vix exsertae. *Ovarium* olivaceum, 6-sulcatum, obtuse trigonum, c. 5,5 mm longum, 2,5 mm diam. *Stylus* demum non vel perbreviter exsertus.

Typus: ANGOLA, Huila Distr., Leach & Cannell 14651 (LISC, holo.; etc.).



FIG. 8.
Aloe vallis Leach, flowers 1:1.

ANGOLA. Huila Distr., Serra da Chela escarpment, cliffs west of Tchivinguero, $\pm$ 1 230 m alt., Hort. Leach., fl. 23.iv.1973, Leach & Cannell 14651 (BM; BR; K; LISC; LUAI; M; MO; PRE; SRGH; WIND), idem fl. 11.xi.1972 (ZSS), idem, Hort. Cannell., fl. v.1972 (LUA), idem, young raceme, 14.iv.1973 (LISC).



FIG. 9.

Aloe vallaris Leach, flowering at Fort Victoria.



FIG. 10.

Aloe vallaris Leach, terminal raceme.

This most distinctive species appears to be most closely related to *A. gossweileri* and *A. catengiana* but differs markedly from both in being a very shrubby plant of relatively dwarf stature, with rosettes of grey-blue to blue-

green leaves tilted to one side, and a simple or 1-branched inflorescence with more narrowly acuminate racemes which are usually about twice as long, or more, as those of its relatives; while the shorter flowers, of which the outer segments are free for only 4.5–6.0 mm are carried on pedicels only half the length of those of either. Additionally the new species differs from *A. catengiana* in its bright scarlet flowers. As to habit *A. vallis* may perhaps approach most closely to *A. hildebrandtii* Bak., from Somalia, and in leaf colour and texture to *A. flexilifolia* Christian, from Tanzania; it is, in fact, not entirely dissimilar from this latter species in habit also, but is essentially a smaller plant differing completely in most other respects, while the young racemes are drooping after the manner of those of *A. deserti* Engl.

Plants form dense clumps, sometimes hanging from rock shelves of cliffs of the western escarpment of the Serra da Chela, at about 1 230 m altitude, a few miles to the west of Tchinguero.

Plant shrubby, 30–50 cm high, branched from the base, with the terminal rosettes of leaves tilted to one side. *Leaves* fleshy, rather softly textured, with a thin, greyish or greenish blue to blueish green cuticle, narrowly ovate-attenuate; those of the rosette 22–34 cm long, $\pm$ 4–5 cm wide and up to 1.5 cm thick towards the base; *upper surface* slightly convex or more or less flat, with a few small, oval or circular, whitish spots towards the base; *lower surface* strongly convex and more freely spotted; the smaller, more widely spaced, amplexicaul lower leaves, copiously spotted on the internodes; *margins* very narrow, yellowish, with yellowish, orange or orange-brown tipped, deltate pungent teeth, 2.0–2.5 mm long, more or less regularly spaced, $\pm$ 10–12 mm apart, with the interspaces more or less straight. The *leaf sap* is very distinctive: of a frothy consistency when wet, it becomes an opaque crystalline yellow crust on drying, with an appearance rather like flowers of sulphur when crushed. *Inflorescence* simple or divaricately one-branched from low down, obliquely or suberectly out-thrust from the rosette of leaves, 50–60 cm, or more, long. *Peduncle* slender, plano-convex at the base, dull green often streaked with brown, becoming terete, purplish brown above, with a few many-nerved, brownish, white margined scarious, sterile bracts, the longest subtending the lateral branch $\pm$ 20 mm long. *Racemes* rather laxly flowered, narrowly elongate cylindric-acuminate, the terminal mostly $\pm$ 32 (25–45) and the lateral 17–30 cm long respectively, about 4 cm diam. with the buds and unopened flowers widely spreading, later and when open, becoming pendulous and sometimes subsecund with the uppermost lying more or less flat along the top of obliquely produced racemes. *Bracts* dry, scarious, pale brown with broad white margins, with 1–5, mostly 3, dark brown nerves, ovate acute, up to 4.5 mm long $\times$ 2.5 mm wide. *Pedicels* brown, 4.0–4.5 mm long. *Perianth* bright scarlet, somewhat purplish at the apex, becoming yellowish at the mouth in open flowers, 20–25

mm long, slightly curved, more or less cylindric (scarcely trigonous), ± 5 mm diam. at the obtuse, scarcely stipitate base, narrowing slightly to $\pm 4,5$ mm above the ovary, thence again widening to $\pm 5,5$ mm diam. at the open mouth; *outer segments* free 4,5–6,0 mm, with 3 brownish nerves confluent at the apex; *inner segments* wider and more obtuse than the outer, with pale, translucent, wide margins and 3 brownish nerves confluent at the orange-yellow apex. *Filaments* yellowish, filiform flattened, the 3 inner narrower and lengthening before the three outer, with the anthers not or scarcely exerted. *Ovary* olive-green, yellowish on the angles, 6-grooved, somewhat reddish 3-striped, obtusely trigonous, $\pm 5,5$ mm long $\times$ 2,5 mm diam. towards the base, tapering slightly towards the apex; *style* straw coloured with the stigma not or only very shortly exerted. *Capsule* and *seed* not seen.

Aloe andongensis Bak. var. *repens* Leach, var. nov.; a varietate typica caulibus repentibus saepe 60 cm longis longioribusve, e basi et superne ramosis; rosulis foliorum parviorum proportione angustiorum; inflorescentia pedunculo ramisque gracilioribus; ovario brunneo-aurantiaco differt.

Typus: ANGOLA, Cuanza Sul Distr., *Leach & Cannell 13950* (BM; BR; K; LISC, holo.; PRE; SRGH).

ANGOLA. Cuanza Sul Distr., without precise locality, cult. & fl. at Nelspruit, Transvaal, 10.vi.1967, *Reynolds* sub *Leach 12899* (LUA; LUAI); ± 11 km E of Gabela, on granite hill in association with *Euphorbia atrocarnesina* Leach, *Huernia volkartii* Wederm. & Peitsch., cult. & fl. at Greendale, Rhodesia, 8.vi.1973, *Leach & Cannell 13950* (BM; BR; K; LISC; PRE; SRGH).

This new variety occurs on the slopes of rounded granite hills in the vicinity of Gabela. It was at first thought to be merely a depauperate form of the typical variety; however, plants have retained their characteristics in cultivation over a number of years and under a variety of conditions, at Mbabane, Swaziland, in the late Dr. Reynold's garden, at Nelspruit, Transvaal, and at Greendale, Rhodesia. Specimens of the typical variety have likewise retained their characteristics; it seems therefore, that the constant divergencies noted have a genetic basis and that the smaller creeping plants should receive taxonomic recognition.

Var. *repens*, as the epithet implies, has a prostrate habit, with stems up to 60 cm or more long, which branch freely from the base and above, so that plants form large spreading clumps. The stems are foliate for the greater part of their length, with much smaller, proportionately narrower and more widely spreading leaves than those of var. *andongensis*; these are armed with smaller, more crowded marginal teeth and are more copiously white-spotted with a tendency for the spots to be arranged in wavy transverse bands. There is little difference in the inflorescence of the new variety, apart from the more slender peduncle and branches, and the brownish orange colour of the ovary.



FIG. 11.

Aloe andongensis Bak. var. *repens* Leach. Leach & Cannell 13950.

Aloe procera Leach, sp. nov.; *A. guerrae* Reyn. affinis sed foliis pallidioribus tenuioribus, pro parte apicali plerumque usque ad $\frac{2}{3}$ per totam longitudinem marcescentibus brunnescentibus, dentibus marginalibus parvioribus; inflorescentia elatissima, supra medium ramifera; racemis longioribus laxius florentibus; floribus purpureis aliquanto brevioribus gracilioribus, plerumque subretrorsis, pedicellis brevioribus; bracteis parvioribus paucinerviis satis diversa.

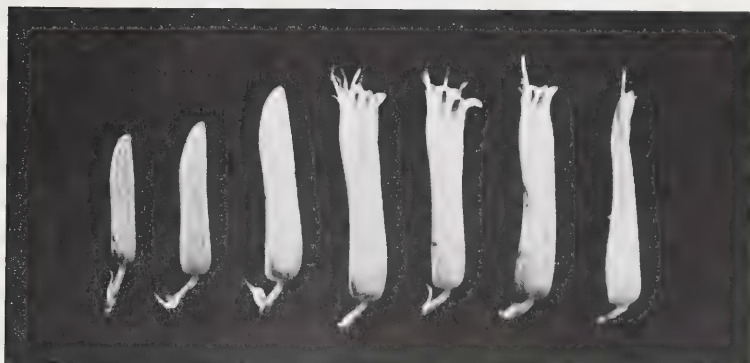


FIG. 12.

Aloe procera Leach, flowers 1:1.

Plantae solitariae, succulentae, plerumque breviaules, caule usque ad c. 25 cm alto. *Folia* c. 20, dense rosulata erecto-patentia ad apicem perleviter recurva, ovato-attenuata, tenuia, pallide viridia, obscure lineata, immaculata, plerumque parte apicali, usque ad $\frac{2}{3}$ per totam longitudinem, brunnescentia siccata marcidaque, basi 8–9,5 cm lata, usque ad c. 55 cm longa parte marcida inclusa; *marginibus* dentatis, angustissime pallide luteo-cartilagineis, dentibus pungentibus plerumque deltatis, interdum uncinatis, basi pallidis apice breviter testaceis, 1,5–3,5 mm longis, 10–18 mm distantibus; *supra* basi plus minusve plana superne perleviter canaliculata; *subtus* basi perleviter convexa fere plana, superne leviter convexa. *Inflorescentia* elata 2,2 m (usque ad 2,75 m), paniculata, pruinosa floribus inclusis, supra medium 9–12 ramosa; *pedunculus* superne viridulus teres, basin versus brunnescens, inaequaliter biconvexus marginibus lateralibus cartilagineis, acutis, saepe fere aliformibus, basi c. 4 cm latus $\times$ 2,25 cm crassus; *rami* oblique saepe fere horizontaliter patuli (racemo terminali incluso), usque ad 55 cm longi, infra racemum aliquot bracteis sterilibus muniti, basi bracteis 2 arcte amplexantibus instructi; inferiore usque ad 2 cm longa $\times$ 1 cm lata, plurinervi; *superiore* simili sed irregulariter truncata, 4–5 mm longa. *Racemi* 25–40 cm longi, plerumque coma parva laxa bractearum siccarum

apice ornati; gemmis floribusque secundis aliquanto retrorsis, floribus paucis unquam apertis tum plerumque valde retrorsis; *bractae* deltatae, attenuatae, scariosae, plerumque 3-nervatae, brunnescentes, 5–6 mm longae, c. 4 mm latae; *pedicelli* 1,5–5 mm longi. *Perianthium* purpureum, 28–33 mm longum, 5–6 mm diam., basi obtusum vel truncatum, haud stipitatum, cylindrico-trigonum rectiusculum, supra ovarium leviter lateraliter compressum distincte trigonum; *segmenta exteriora* per 9–11 mm libera, apice subacuta leviter patentia, c. 3,5 mm lata, marginibus pallidioribus; nervis 3, atro-purpureis ad apicem confluentibus; *interiora* obtusiora, latiora (usque ad 6,5 mm), obscure 3-nervata leviter obtuse carinata, marginibus latioribus pallidioribus apicem versus albescentibus, supremo valde patenti recurvo, lateralibus paululum patentibus. *Antherae* atroarmeniaca deinceps breviter exsertae. *Ovarium* atroviride aliquanto anguste olliforme, c. 7 mm longum $\times$ 3,5 diam. *Stylus* pallide stramineus demum usque ad 6 mm exsertus. *Semina* plus minusve oblonga, fusca, c. 12,5 mm $\times$ 5,0 mm, inaequaliter 3-alata, alis membranaceis exalbidis.

Typus: ANGOLA, Cuanza Sul Distr., L. C. Leach & I. C. Cannell 14617 (LISC, holo.; SRGH).

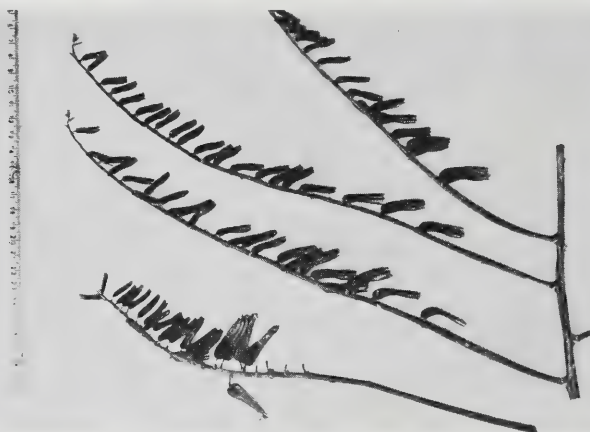


FIG. 13.

Comparison of racemes: *A. procera* above; *A. guerrae* below.

ANGOLA. Cuanza Sul Distr. $\pm$ 50 km N of Quibala, approx. 10°20'S: 14°51'E, alt. $\pm$ 1 230 m, steep hillside in deciduous woodland, Hort. N. D. Bey, Salisbury, fl. 12.vii.1972, Leach & Cannell 14617 (LISC; SRGH), *ibid.*, 14617A (BM), *ibid.*, Hort. I. C. Cannell, Fort Victoria, fl. 6.viii.1972, 14617B (K; PRE).

In common with the recently described *A. luapulana* Leach, this new Angolan species seems to find its nearest relatives among members of the group con-



FIG. 14.

Mr. I. C. Cannell with typical plant, 50 km N of Quibala.
Aloe procera Leach.

taining *A. christianii* Reyn. and *A. pretoriensis* Pole Evans, while it is obviously most closely related to *A. guerrae* of this affinity. *A. procera* differs from this latter in its thinner, paler green leaves with smaller marginal teeth and the apical portion dry and withered; in leaf characters the new species is very close indeed to *A. luapulana* but is otherwise quite different. More important differential characters by which *A. procera* is distinguished from *A. guerrae* lie in its remarkably tall inflorescence which is branched above the middle and bears longer, more laxly flowered racemes of subretrorse, rather smaller, purple flowers, borne on pedicels only about half the length of those of *A. guerrae* and subtended by smaller, few nerved bracts.

This interesting new species is known only from the type locality where it might have remained undiscovered but for a recent fire which had cleared the undergrowth and tall grass sufficiently for plants to be noticeable from the road. Plants, although locally plentiful, occur only as scattered individuals among tall grasses in deciduous woodland and are frequently, although apparently not necessarily, closely associated with the termite mounds which abound on the red clayey soil of the steep hillsides of their habitat.

The tall inflorescence of this species, which is matched in height only by those of *A. christianii* and *A. pretoriensis*, among the more or less acaulescent species of Africa, is all the more remarkable in view of the relatively small size of the plants from which it is produced.

A small plant, flowering for the first time at the Botanical Research Institute, Pretoria, bore a l-branched inflorescence about 1,7 m high, with racemes erect, and flowers evenly distributed around the axes. As a similar tendency in respect of the terminal racemes appears occasionally to occur in older plants it seems possible that "racemes oblique" may be, to some extent, a character acquired with age.

Plants solitary, succulent, acaulescent or usually shortly caulescent, with a short, stout stem, up to ± 25 cm high, with the rosette held erect. *Leaves* about 20, densely rosulate, erectly spreading, very slightly recurved at the apex, ovate-attenuate, thin, scarcely fleshy, pale green, obscurely lineate, unspotted, usually with the apical portion (up to 2/3rds their length) becoming brown, dry and withered, 8–9,5 cm broad at the base, up to 55 cm long, including the withered apical portion; *margins* extremely narrow cartilaginous, pale yellowish, armed with sharp, deltate or occasionally hooked teeth, the colour of the margin at their base; shortly orange brown tipped, 1,5–3,5 mm long, 10–18 mm apart along the margin, generally more crowded towards the base of the leaf; *upper surface* more or less flat low down, becoming slightly canaliculate above; *lower surface* very slightly convex near the base becoming somewhat more so towards the apex. *Inflorescence* paniculate 2,2 m (up to 2,75 m) tall, 9–12 branched above the middle, heavily pruinose including the flowers; *peduncle* terete above, greenish becoming brownish towards the unequally biconvex base, with the lateral margins cartilaginous, sharp and almost wing-like, ± 4 cm wide $\times$ 2,25 cm thick near the base; *branches* obliquely, often almost horizontally spreading (usually including the terminal raceme), up to 55 cm long, the lowermost with up to two branchlets which are sometimes held erect; with a few sterile bracts below the racemes and tightly clasped at their base by a pair of many nerved brownish bracts, the lower narrowly triangular, up to 2 cm long $\times$ 1 cm wide, the upper similar but irregularly truncate and only 4–5 mm long. *Racemes* 25–40 cm long, usually with a small lax coma of dry bracts at their apex; buds and flowers secund, somewhat retrorse with

the open flowers (few at any one time) strongly so; *bracts* deltate attenuate, scarious, brownish with 3 raised brown nerves (sometimes supplemented by an obscure usually incomplete nerve on each side), 5–6 mm long $\times$ 4 mm wide; *pedicels* the colour of the perianth, 1.5–5 mm long, averaging about 3 mm. *Perianth* dull reddish purple, 28–33 mm long, 5–6 mm diam., obtuse or truncate at the base, not at all stipitate, cylindric-trigonus, fairly straight, slightly laterally compressed above the ovary and becoming distinctly trigonus; *outer segments* free for 9–11 mm, slightly spreading at the subacute apex, $\pm$ 3.5 mm wide with paler rosy margins; with 3 dark purple nerves becoming confluent at the apex; *inner segments* more obtuse and wider (up to 6.5 mm) than the outer, obscurely 3-nerved, slightly obtusely keeled, with wide pale margins becoming whitish towards the apex; the uppermost segment strongly spreading recurved at the apex but the laterals only very slightly so. *Anthers* rich orange brown, in turn shortly exerted. *Ovary* rather dark dull green, slightly barrel shaped, $\pm$ 7 mm long $\times$ 3.5 mm diam. *Style* pale straw coloured, at length exerted up to 6 mm. *Capsule* ellipsoid, shallowly 6-grooved, dull green, $\pm$ 3 cm $\times$ 1.5 cm diam., borne on a short pedicel 6 mm long (apparently lengthened only slightly). *Seeds* more or less oblong, dull light brown, $\pm$ 12.5 mm long $\times$ 5 mm wide, unequally 3-winged, with whitish membranaceous wings.

A. procera would “Key out” in Reynolds, *Aloes of Tropical Africa and Madagascar*: 219 (1966), under Group 14,A(b), being distinguished by:

Racemes sublux to lax, 25–40 cm long; *Pedicels* 1.5–5.0 mm long;

Perianth dull purple, 28–33 mm long.

Also, of course, by its very much taller inflorescence.

Aloe esculenta Leach, in JI S. Afr. Bot. **37**: 249 (1971).

When publishing this species the possibility was discussed that the correct name might be *A. baumii* Engl. & Gilg, but that in the absence of any material, the photograph in Warburg, Kunene-Sambesi Expedition: t.90 (1903) must, of necessity, be accepted as portraying *A. baumii*, and its synonymy with *A. zebrina* Bak. consequently also accepted.

Subsequent to the publication of *A. esculenta* I was informed by Mr. B. L. Burtt of the Royal Botanic Gardens, Edinburgh (E), that a duplicate of *Baum* 275 existed in that herbarium. This specimen was kindly sent on loan to the Government Herbarium, Salisbury, Rhodesia (SRGH), for my examination.

Unfortunately this material is a mixture of two quite different species and serves only to confirm the confusion which exists in relation to the identity of *A. baumii*.

Mounted on the sheets are two inflorescence branches only, with all the flowers detached and loose in a capsule. There are no leaves. The bracts subtending the pedicels on these branches are $\pm$ 10 mm or less in length, thereby

indicating *A. zebrina* as being the probable source of the specimen (this measurement agrees with that given by Engler & Gilg for the bracts of *A. baumii*). However, on counting the loose flowers and buds it was found that there are 109 of these but only 46 pedicels on the apparently complete, supposedly corresponding inflorescence branches. Some of the flowers are a good match for those of *A. esculenta*, while others have the basally inflated perianth of those of *A. zebrina*; also loose in the capsule are two only bracts which are very much larger than those of the inflorescence branches of the specimen, these are ± 20 mm long and correspond well with those of *A. esculenta*.

How, when or where the mixture occurred is a matter for speculation but it seems possible that the description may be as much a mixture as is the material. However, since the major portion of the material appears to belong to *A. zebrina* rather than to *A. esculenta* and the locality given on the collector's label coincides with that of the photograph (a locality where, as far as is known, *A. esculenta* does not occur), which photograph appears definitely to depict *A. zebrina*, it seems that the nomenclatural position regarding *A. baumii* remains as outlined in the Journal of S. African Botany *l.c.*, and that it should, therefore, continue to be regarded as synonymous with *A. zebrina*.

The puzzle of the October flowering of *Baum* 275 remains, as this date is confirmed by the information given on the collector's label attached to the Edinburgh sheet.

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